

IN THE CLAIMS:

Please cancel Claims 17-18 without prejudice.

Please amend the remaining claims as follows:

See B1
1. (Once amended) A vertical cavity surface emitting laser (VCSEL), comprising:

A3
at least one quantum well having a depth of at least 40 meV, wherein said at least one quantum well comprises of material that is free of indium and is comprised of GaAsSb;

barrier layers sandwiching said at least one quantum well; and
confinement layers sandwiching said barrier layers.

2. (Once amended) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

3. (Once amended) The VCSEL of claim 1 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

4. (Not amended) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

5. (Not amended) The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.

A4 B1
6. (Once amended) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

A4 and B1

7. (Once amended) The VCSEL of claim 1 wherein said at least one quantum well further comprises greater than 1% N.

8. (Not amended) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

B1

9. (Once amended) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

AS

10. (Once amended) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

11. (Once amended) The VCSEL of claim 6 wherein said confinement layers are comprised of GaAsN.

12. (Once amended) The VCSEL of claim 6 wherein said barrier layers are comprised of GaAsN and said confinement layers are GaAsP.

13. (Once amended) The VCSEL of claim 14 wherein said at least one quantum well comprises $>1\%$ N.

14. (Not amended) The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

15. (Not amended) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

A6 B1

16. (Once amended) The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

17. CANCELLED

18. CANCELLED

19. (Not amended) The VCSEL of claim 1 wherein said quantum well is up to and including 50Å in thickness.

20. (Once amended) The VCSEL of claim 19 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

21. (Once amended) The VCSEL of claim 19 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

22. (Once amended) The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsP.

23. (Once amended) The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.

24. (Not amended) The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs.

25. (Not amended) The VCSEL of claim 19 wherein said at least one quantum well comprises N.

26. (Not amended) The VCSEL of claim 25 wherein said barrier layers are comprised of GaAsP.

27. (Not amended) The VCSEL of claim 25 wherein said confinement layers are comprised of AlGaAs.

ASB1
28. (Once amended) The VCSEL of claim 26 wherein said confinement layers are comprised of AlGaAs.

29. (Not amended) The VCSEL of claim 27 wherein said barrier layers are comprised of AlGaAs.

30. (Not amended) The VCSEL of claim 25 wherein said barrier layers are comprised of AlGaAs.

AG B1
31. (Once amended) The VCSEL of claim 19 wherein said at least one quantum well comprises >1% N.

32. (Not amended) The VCSEL of claim 31 wherein said barrier layers are comprised of GaAsP.

33. (Not amended) The VCSEL of claim 31 wherein said confinement layers are comprised of AlGaAs.

34. (Not amended) The VCSEL of claim 32 wherein said confinement layers are comprised of AlGaAs.

35. (Not amended) The VCSEL of claim 33 wherein said barrier layers are comprised of AlGaAs.

36. (Not amended) The VCSEL of claim 31 wherein said barrier layers are comprised of AlGaAs.

21
37. (Once amended) A vertical cavity surface emitting laser (VCSEL),
comprising:

at least one indium free quantum well comprised of GaAsSb;
GaAs_barrier layers sandwiching said at least one quantum well; and
GaAs confinement layers sandwiching said barrier layers.

410
38. (Once amended) The VCSEL of claim 37 wherein said barrier layers are
comprised of GaAs and at least one of Sb, N, Al, P.

39. (Once amended) The VCSEL of claim 37 wherein said confinement layers
are comprised of GaAs and at least one of Sb, N, Al, P.

40. (Once amended) The VCSEL of claim 37 wherein said confinement layers
are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

41. (Once amended) The VCSEL of claim 37 wherein said barrier layers are
comprised of AlGaAs and said confinement layers are comprised of GaAsP.

42. (Once amended) The VCSEL of claim 37 wherein said barrier layers are
comprised of AlGaAs.

43. (Once amended) The VCSEL of claim 37 wherein said at least one
quantum well further comprises >1% N.

44. (Once amended) The VCSEL of claim 37 wherein said barrier layers are
comprised of GaAsP.

45. (Once amended) The VCSEL of claim 37 wherein said confinement layers
are comprised of AlGaAs.

46. (Once amended) The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs.

47. (Once amended) The VCSEL of claim 37 wherein said quantum well is up to and including 50 Å in thickness.

48. (Once amended) A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well consisting essentially of GaAsSb;
GaAs barrier layers sandwiching said at least one quantum well; and
AlGaAs confinement layers sandwiching said barrier layers.

49. (Once amended) The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsP.

50. (Once amended) The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsN.

51. (Once amended) The VCSEL of claim 48 wherein said at least one quantum well further comprises >1% N.

52. (Not amended) The VCSEL of claim 51 wherein said barrier layers are comprised of GaAsP.

53. (Not amended) The VCSEL of claim 51 wherein said barrier layers are comprised of AlGaAs.

54. (Not amended) The VCSEL of claim 48 wherein said quantum well is up to and including 50 Å in thickness.

55. (Not amended) The VCSEL of claim 54 wherein said barrier layers are comprised of GaAsP.

56. (Not amended) The VCSEL of claim 54 wherein said barrier layers are comprised of AlGaAs.

B¹ All 57. (Once amended) The VCSEL of claim 54 wherein said at least one quantum well further comprises >1% N.